



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,755	12/15/2000	Anthony Reid	12153RRUS01U	2083

7590

02/24/2004

BRACEWELL & PATTERSON, L.L.P.  
INTELLECTUAL PROPERTY LAW  
P.O. BOX 969  
AUSTIN,, TX 78767-0969

EXAMINER

LAMARRE, GUY J

ART UNIT	PAPER NUMBER
2133	6

DATE MAILED: 02/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Gray - 01/10  
1/10  
300 611

## Office Action Summary

Application No.

09/738,755

Applicant(s)

REID ET AL.

Examiner

Guy J. Lamarre, P.E.

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### FINAL OFFICE ACTION

0. This office action is in response to Applicants' amendment of *05 December 2003*.
- 0.1 **Claims 1-2, 4, 8-9, 11, 15-16 and 18-23** are amended. Claims **1-23** remain pending.
- 0.2 The objections of record to the specification and to **Claims 15 and 18**, are withdrawn in response to Applicants' amendment of *05 December 2003*.
- 0.3 The rejections of record to **Claims 15-17 and 20-23** under 35 U.S.C. 101 are withdrawn in response to Applicants' amendment of *05 December 2003*.
- 0.4 The prior art rejections of record to **Claims 1-19** under 35 U.S.C. 102(b) as being anticipated by **Alamouti** (US Patent No. 5,784,417) are withdrawn in response to Applicants' amendment of *05 December 2003*.
- 0.4.1 The prior art rejections of record to **Claims 20-23** under 35 U.S.C. 102(b) as being anticipated by **Alamouti** (US Patent No. 5,784,417) are maintained in response to Applicants' amendment of *05 December 2003*.

### Response to Arguments

1. Applicants' arguments and amendments to **Claims 1-2, 4, 8-9, 11, 15-16 and 18-23**, filed *05 December 2003*, have been fully considered:

They are deemed persuasive only to the extent that **Claims 1-19**, as amended whereby

Independent **Claims 1 and 9** recite interleaving means for maximizing Euclidean distance and GPRS feature as a positive limitation,

Independent **Claims 15 and 18** recite GPRS wireless network feature as a positive limitation,

are not specifically disclosed in detail by the prior art of record.

Applicants' arguments, re: **Claims 20-23**, are not persuasive because the prior art does not have to disclose intended use.

**1.1** Examiner's response is summarized as follows:

**Claims 20-23 do not** recite GPRS wireless as a positive limitation and thus stand anticipated by **Alamouti** of record.

Independent **Claims 1 and 9** newly reciting interleaving means for maximizing Euclidean distance and GPRS feature as a positive limitation are newly rejected under 35 U.S.C. 103(a) over **Alamouti** of record in view of **Wei** (EP No. 0486729; 24 Jan. 1996) in further view of **Mazur et al.** (US Patent No. 6438115) because **Wei** teaches obvious interleaving means for optimizing codeword Euclidean distance, and that **Mazur et al.** teaches obvious GPRS feature means.

Independent **Claims 15 and 18** newly reciting GPRS wireless network feature as a positive limitation are newly rejected under 35 U.S.C. 103(a) over **Alamouti** of record in view of **Mazur et al.** (US Patent No. 6438115) because **Mazur et al.** renders such GPRS feature means obvious.

The prior art rejections are as formulated below.

**Claim Objections**

**2. The following claims** are objected to because:

**Claim 1** line 3, **Claim 9** line 6, **Claim 15** line 1 respectively recite '(GPRS)-enabled.' It is not clear to the Examiner what happens when (GPRS) is not enabled. Examiner reads '(GPRS)-enabled' as GPRS-configured.

**Claim 8** line 3 recites 'air link channel (PDTCH):' the bracketed information PDTCH is not given patentable weight and it is not clear to the Examiner how 'air link channel' is abbreviated into the acronym "PDTCH." Said acronym shall be spelled out.

**Claim 20** line 5 recites 'air link utilizing;' it is not clear to the Examiner what is means by 'air link utilizing.' Examiner ignores the word 'utilizing.'

Appropriate correction is required.

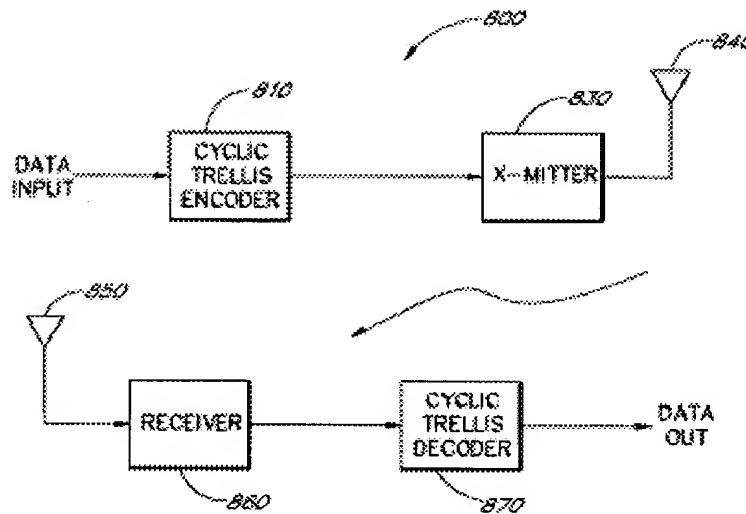
**Claim Rejections - 35 USC § 102**

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.1 Claims 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by **Alamouti** (US Patent No. 5,784,417; issue date: 21 July 1998).



**FIG. 8**

As per Claims 20, 22, Alamouti anticipates the claimed invention because Fig. 8 depicts a wireless system for providing data transfer over a wireless air link in networks such as GPRS/EDGE networks comprising trellis encoder/decoder (numerals 810 & 870) and wireless transmitter (numeral 830) that mitigates fading within transmission channels (Figs. 11-13 and 17-18) via QAM (Figs. 1A-B) with means to digitize data into radio waves via antenna (numeral 840), wherein channel fading due to said wireless air link is substantially reduced: Alamouti discloses channel fading reduction means, in col. 3 line 64, via maximizing minimum Euclidean distance between points of the signal constellation, *e.g.*, "... invention provides for a trellis encoder

*which trellis encodes input data signals, wherein the input data signals are mapped according to a modulation scheme such that a signal constellation defined by the modulation scheme cannot be set partitioned such that each level of set partitioning results in a substantially increased minimum Euclidean distance between points of the signal constellation.”*

**As per Claim 21, Alamouti** discloses the claimed quadrature amplitude modulator that modulates said encoded data to increase a number of simultaneous transmissions within an allocated bandwidth wherein Trellis Coded Modulation (TCM) is provided over Quadrature Amplitude Modulation (QAM) during a coding sequence as TCM in **Alamouti's** Fig. 8, quadrature amplitude modulator and QAM in col. 13 line 55. Fig. 8 depicts trellis coder (numeral 810) and wireless transmitter (numeral 830) that mitigates channel fading (Figs. 11-13 and 17-18) via QAM (Figs. 1A-B) with means to convert digitized data into radio waves via antenna (numeral 840) for wireless communication.

**As per Claim 23, Alamouti** discloses the claimed means wherein said Trellis encoder utilizes Amplitude Phase Modulation to form constellation lattices in a signaling space in col. 1 lines 32-34.

3.2 To the extent that the response to the applicant's arguments may have mentioned new portions of the prior art references which were not used in the prior office action, this does not constitute a new ground of rejection. It is clear that the prior art reference is of record and has been considered entirely by applicant. See *In re Boyer*, 363 F.2d 455, 458 n.2, 150 USPQ 441, 444, n.2 (CCPA 1966) and *In re Bush*, 296 F.2d 491, 496, 131 USPQ 263, 267 (CCPA 1961).

The mere fact that additional portions of the same reference may have been mentioned or relied upon does not constitute new ground of rejection. *In re Meinhardt*, 392, F.2d 273, 280, 157 USPQ 270, 275 (CCPA 1968).

Art Unit: 2133

**Claim Rejections - 35 USC ' 103**

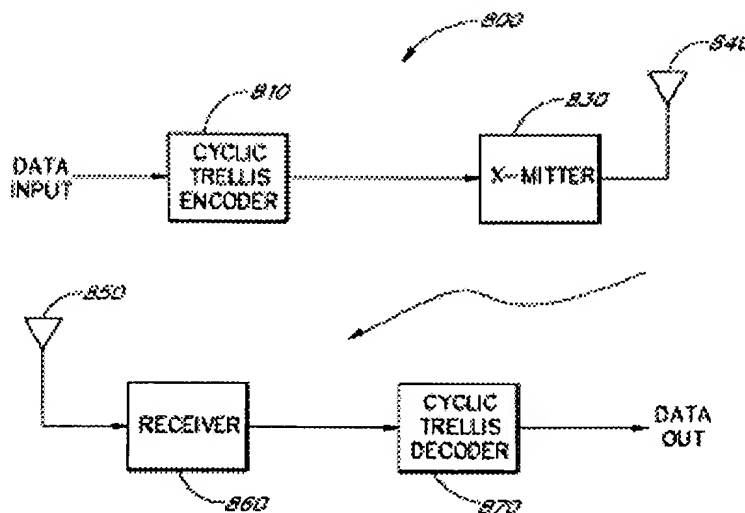
4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4.0 This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4.1 **Claims 1-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Alamouti** (US Patent No. 5,784,417; issue date: 21 July 1998) in view of **Wei** (EP No. 0486729; 24 Jan. 1996) in further view of **Mazur et al.** (US Patent No. 6438115; filed: 8 Mar. 1999).

As per **Claims 1, 9-10, 12**, **Alamouti** substantially depicts wireless data transfer means over wireless channel of a GPRS/EDGE communication network, in Fig. 8 (below), comprising:

**FIG. 8**

trellis coder (numeral 810) within a radio communication system or transceiver or terminal or device between an input/origination point for data being transmitted and interleaving mechanism

Art Unit: 2133

(col. 13 line 37) within a data transmission channel wherein said trellis coder specifically encodes said data to substantially eliminate fading on the transmission channel and increase capacity on an allocated bandwidth by providing a maximum Euclidian distance between words of said data during encoding, which distance reduces signal power required for transmitting said data over a wireless channel (**Alamouti** discloses such means, in col. 3 line 64, to maximize minimum Euclidean distance between points of the signal constellation, *e.g.*, “... *invention provides for a **trellis encoder** which trellis encodes input data signals, wherein the input data signals are mapped according to a **modulation** scheme such that a signal **constellation** defined by the modulation scheme cannot be set partitioned such that each level of set partitioning results in a **substantially increased minimum Euclidean distance** between points of the signal constellation.*”); and wireless transmitter (numeral 830) that mitigates channel fading (channel fading comprising AWGN and Rician or Rayleigh fading similar to applicants’ channel fading characteristics as formulated in applicants’ specification on page 13 line 4 et seq.: **Alamouti** discloses such data protection means, in col. 14 line 6 et seq., and Figs. 11-13 and 17-18) via QAM (Figs. 1A-B) with means to digitize data into radio waves via antenna (numeral 840).

**Not specifically described** in detail in **Alamouti** is the step whereby the act of computing Euclidian distance includes optimizing such distance for substantial reduction of signal power required for transmitting said data over a wireless channel.

**However, Wei**, in an analogous art, discloses, in ‘*Coded Modulation for Mobile Radio*,’ an algorithm via a time diversity methodology whereby an interleaving mechanism synergistically combined with a modulation scheme results in substantially reducing the signal power required for transmitting data over a wireless channel in **Wei**, *id.*, *e.g.*, at col. 8 line 57, col. 12 lines 5-45, col. 13 lines 6-25 et seq., and Figs. 8-9.



**Therefore**, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the Euclidean computation approach in **Alamouti** by including therein optimization means via interleaving as taught by **Wei**, because such modification would provide the trellis coding *system* disclosed in **Alamouti** with an advantageous technique whereby “the larger the Euclidean distance between codewords, the greater the coding gain or equivalently the larger the Euclidean distance between codewords, the greater the bandwidth efficiency and the less power is required for data processing.” {See **Wei**, *Id.*, col. 12 lines 14-15, col. 9 line 24.}

**While Alamouti and Wei** substantially disclose the procedure for the claimed wireless communications system, they **fail to specifically disclose in detail** the step of implementing the radio communication system, for use in, or in a GPRS or general packet radio services device.

**However, those of ordinary skill in** data communications will appreciate that, under 35 U.S.C. 102 and 103, the prior art does not have to show intended use or purpose in order to render a claim anticipated or obvious. Even Applicants concede that wireless communication uses plural standards, e.g., GPRS, EDGE, GSM, and SMS in lines 16-26 of page 1. **Alamouti** discloses TCM for digital communications in col. 13 line 40 and **Wei** discloses interleaving/modulation means to combat channel fading for mobile digital communications in col. 12 line 2.

**Accordingly, Mazur et al.**, in an analogous art, discloses a digital communications system compliant with the GPRS specification at col. 4 line 24 et seq.

**Therefore**, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the communications *system* in **Alamouti** and **Wei** by including therein GPRS *compliance means* as taught by **Mazur et al.**, because such modification would provide the *system* disclosed in **Alamouti** and **Wei** with an advantageous technique

Art Unit: 2133

whereby “via the GPRS, plural coding schemes can be implemented based on the quality of the radio carrier to improve data processing.” {See **Mazur et al.**, Id., col. 1 lines 38-60.}

**As per Claims 2, 11, Alamouti** discloses the claimed quadrature amplitude modulator that modulates said encoded data to increase a number of simultaneous transmissions within an allocated bandwidth wherein Trellis Coded Modulation (TCM) is provided over Quadrature Amplitude Modulation (QAM) during a coding sequence as TCM in **Alamouti's** Fig. 8, quadrature amplitude modulator and QAM in col. 13 line 55. Fig. 8 depicts trellis coder (numeral 810) and wireless transmitter (numeral 830) that mitigates channel fading (Figs. 11-13 and 17-18) via QAM (Figs. 1A-B) with means to convert digitized data into radio waves via antenna (numeral 840) for wireless communication.

**As per Claim 3, Alamouti** discloses the claimed digital converter that converts data into radio waves to enable wireless transmission. **Alamouti's** Fig. 8 depicts trellis coder (numeral 810) and wireless transmitter (numeral 830) that mitigates channel fading (Figs. 11-13 and 17-18) via QAM (Figs. 1A-B) with means to convert (D/A) digitized data into radio waves via antenna (numeral 840) for wireless communication.

**As per Claim 4, Alamouti** discloses the claimed Trellis coder including both a Trellis encoder and a Trellis decoder and that decodes encoded data received from a next system across said wireless channel. **Alamouti's** Fig. 8 depicts trellis coding system including both a Trellis encoder (numeral 810) and a Trellis decoder (numeral 870) and wireless transceivers (numerals 830 & 860) that mitigates channel fading (Figs. 11-13, 17-18) via QAM (Figs. 1A-B) with means to convert (D/A) digitized data into radio waves via antennas (numerals 840, 850) for wireless communication. **Examiner** also notes that it has been held that only routine skill in the art is required in re-ordering component hardware of an electronic system. *In re Japikse*, 86 USPQ 70 (CCPA 1950).

**As per Claim 5, Alamouti** discloses the claimed Trellis coder configured as a Trellis encoder along with and a Trellis decoder decodes encoded data received from a next system across said wireless channel. **Alamouti's** Fig. 8 depicts trellis coding system including both a Trellis encoder (numeral 810) and a Trellis decoder (numeral 870) and wireless transceivers (numerals 830 & 860) that mitigates channel fading (Figs. 11-13, 17-18) via QAM (Figs. 1A-B) with means to convert (D/A) digitized data into radio waves via antennas (numerals 840, 850) for wireless communication. **Examiner** also notes that it has been held that only routine skill in the art is required in re-ordering component hardware of an electronic system. *In re Japikse*, 86 USPQ 70 (CCPA 1950).

**As per Claims 6, 13, Alamouti** discloses the claimed Trellis coder configurable as an integrated circuit within a wireless component. **Alamouti** discloses such coding system integration in col. 15 line 23, col. 21 line 4 et seq. Such coding is also implementable via software in col. 22 line 16. **Examiner** also notes that it has been held that only routine skill in the art is required in making an electronic system integral for reduction in cost or component hardware. *In re Larson*, 144 USPQ 347, 349 (CCPA 1965).

**As per Claims 7, 14, Alamouti** discloses the claimed wireless component is a voice communication device and said Trellis coder further encodes and decodes voice communication. **Alamouti's** Fig. 8 depicts trellis coding system including both a Trellis encoder (numeral 810) and a Trellis decoder (numeral 870) and wireless transceivers (numerals 830 & 860) that mitigates channel fading (Figs. 11-13, 17-18) via QAM (Figs. 1A-B) with means to convert (D/A) digitized data into radio waves via antennas (numerals 840, 850) for wireless communication. Digitized data may represent analog signals comprising voice, image or text.

**As per Claim 8, Mazur et al.** discloses the claimed system wherein said wireless channel operates via Traffic Channel Full Rate (TCH/F) to provide said data at a highest possible

Art Unit: 2133

speed and capacity utilizing Trellis coding over the air link channel (PDTCH) in col. 5 line 19, col. 9 lines 59-65. **Mazur et al.** discloses channel types comprising physical and logical channels in col. 2 lines 44-67 et seq., wherein wireless channel operates via Traffic Channel Full Rate (TCH/F) {See **Mazur et al.**, Id., e.g., Figs. 5a-5b, col. 5 line 1 - col. 6 line 67 for means to allocate channel rates, channel rates relate to amounts of data contained in a frame at col. 5 lines 8, 14, 21, 24, corresponding to the data transmission rate}

**4.2 Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alamouti (US Patent No. 5,784,417; issue date: 21 July 1998) in view of Mazur et al. (US Patent No. 6438115; filed: 8 Mar. 1999).**

As per Claims 15, 18, **Alamouti** substantially depicts wireless data transfer means over wireless channel of a communication network, in Fig. 8, comprising, trellis encoding/decoding means (numerals 810 & 870) within a radio communication system or transceiver or terminal or device

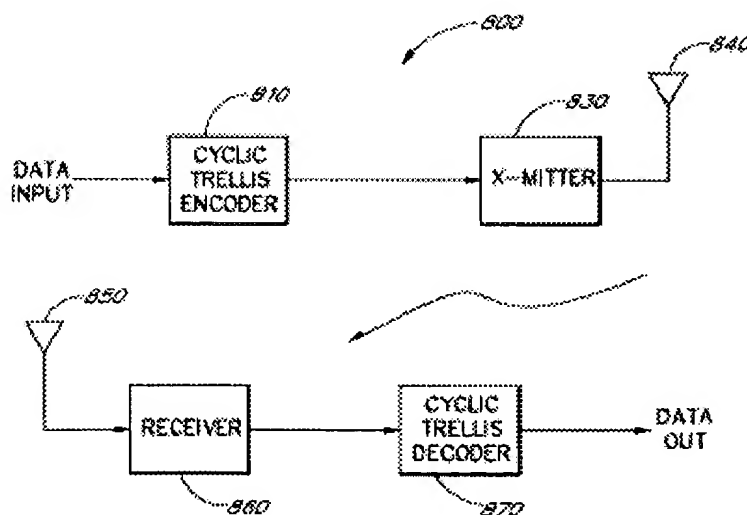


FIG. 8

means (numeral 860) for receiving data for transmission over a wireless link of a wireless network; evaluating a maximum Euclidian distance (**Alamouti** discloses such means, in col. 3 line 64, to maximize minimum Euclidean distance between points of the signal constellation,

Art Unit: 2133

e.g., "... invention provides for a **trellis encoder** which trellis encodes input data signals, wherein the input data signals are mapped according to a **modulation** scheme such that a signal **constellation** defined by the modulation scheme cannot be set partitioned such that each level of set partitioning results in a **substantially increased minimum Euclidean distance** between points of the signal constellation.") between codewords of said data to reduce signal power requirements; minimizing fading channel effects in col. 3 line 64 with transmission of said codewords; encoding said data utilizing results of said evaluating and minimizing steps in Fig. 8 via trellis encoding/decoding means (numerals 810 & 870) within a radio communication system or transceiver or terminal or device; and transmitting (col. 13 line 37) said encoded data over said wireless link. (**Alamouti** discloses such means, in col. 3 line 64, to maximize minimum Euclidean distance between points of the signal constellation, e.g., "... invention provides for a **trellis encoder** which trellis encodes input data signals, wherein the input data signals are mapped according to a **modulation** scheme such that a signal **constellation** defined by the modulation scheme cannot be set partitioned such that each level of set partitioning results in a **substantially increased minimum Euclidean distance** between points of the signal constellation."); and wireless transmitter (numeral 830) that mitigates channel fading (channel fading comprising AWGN and Rician or Rayleigh fading similar to applicants' channel fading characteristics as formulated in applicants' specification on page 13 line 4 et seq.: **Alamouti** discloses such data protection means, in col. 14 line 6 et seq., and Figs. 11-13 and 17-18) via QAM (Figs. 1A-B) with means to digitize data into radio waves via antenna (numeral 840). **Alamouti** further discloses TCM via software means in col. 22 line 16.

While **Alamouti** substantially discloses the claimed wireless communications, the **Alamouti** reference fails to specifically disclose the step of implementing the wireless communication system, for use in, or in a GPRS/EDGE or general packet radio services device.

**However, those of ordinary skill in** data communications will appreciate that, under 35 U.S.C. 102 and 103, the prior art does not have to show intended use or purpose in order to render a claim anticipated or obvious. Even **Applicants** concede that wireless communication uses plural standards, e.g., GPRS, EDGE, GSM, and SMS in lines 16-26 of page 1 of **Applicants'** specification. **Alamouti** discloses TCM for digital communications in col. 13 line 40 for use in plural mobile environments in col. 14 line 6 compatible with plural communications standards.

**Accordingly, Mazur et al.**, in an analogous art, discloses a digital communications system compliant with the GPRS specification and enhanced GPRS specifications, e.g., at col. 1 line 45, col. 4 line 24 et seq.

**Therefore**, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the communications *system* in **Alamouti** by including therein GPRS *compliance means* as taught by **Mazur et al.**, because such modification would provide the *system* disclosed in **Alamouti** with an advantageous technique whereby "via the GPRS, plural coding schemes can be implemented based on the quality of the radio carrier so as to improve data processing." {See **Mazur et al.**, Id., col. 1 lines 38-60.}

**As per Claims 16, 19, Alamouti** discloses the claimed QAM modulating means for modulating said encoded data to increase a number of simultaneous transmissions within an allocated bandwidth wherein Trellis Coded Modulation (TCM) is provided over Quadrature Amplitude Modulation (QAM) during a coding sequence as TCM in **Alamouti's** Fig. 8, quadrature amplitude modulator and QAM in col. 13 line 55. Fig. 8 depicts trellis coder (numeral 810) and wireless transmitter (numeral 830) that mitigates channel fading (Figs. 11-13 and 17-18) via QAM (Figs. 1A-B) with means to convert digitized data into radio waves via antenna (numeral 840) for wireless communication.

As per Claim 17, Alamouti discloses the claimed decoding means for decoding said Trellis encoded data received via said wireless air link in trellis decoding means (Fig. 8: numeral 870)

### REMARKS

5.0 In response to amended Claims 1-23, Applicants allege, on Applicants' response of pages 10-11, that the prior art of record (**Alamouti**) discloses the following features:

1) a trellis coder incorporated within a GPRS-enabled terminal/device and interleaving mechanism..., for reducing required transmitted signal power over a wireless channel.

Examiner disagrees as this approach of interleaving mechanism..., for reducing required transmitted signal power over a wireless channel is clearly disclosed, e.g., in Fig. 8 and in col. 13 line 37 by **Alamouti**. But **Alamouti** makes no nexus between optimizing maximum Euclidean distance for GPRS. **Wei** provides nexus **interleaving** and optimizing **Euclidean distance** while **Mazur et al.** teaches logical channel definition for **GPRS**.

Examiner thus maintains that the combination of **Alamouti-Wei-Mazur** renders the Claims reciting such features **obvious**.

2) a quadrature amplitude modulator with TCM and QAM during a coding sequence. **Alamouti** discloses such TCM in Fig. 8, quadrature amplitude modulator and QAM in col. 13 line 55. **Alamouti** also discloses alternative decoding means such as Viterbi decoding, e.g., in col. 21 line 63.

3) Trellis coder including both Trellis encoder and decoder. **Alamouti** discloses such, e.g., in col. 15 line 23 and Fig. 8.

4) wherein said Trellis **coder is located in integrated circuit**. **Alamouti** discloses such system integration in col. 15 line 23, col. 21 line 4 et seq.

5) wherein said wireless channel operates via traffic channel/full rate for highest speed and capacity utilizing trellis coding over the air link channel (PDTCH). **Alamouti does not have to disclose intended use, i.e., 'via' is through the use of, 'utilizing' is simply equivalent to 'using.'**

**5.1 In response to Applicants allegations, on Applicants' response of page 11 paras. 2 to end, Examiner reiterates that the prior art of record (Alamouti) under standards for 35 USC 102/103 does not have to show intended use. Nevertheless, Alamouti teaches TCM for wireless communications, such as mobile radio or cellular communications (col. 14 lines 6-7), which encompasses GPRS/EDGE. Even Applicants admit that GPRS/EDGE is a communications standard in instant specification at page 1 line 16. Therefore absent a claim limitation that clearly distinguishes over the prior art, applicants' use of Alamouti's TCM to render such TCM compatible with a communications standard, such as GPRS/EDGE, does not depart in scope or spirit from Alamouti..**

### **Conclusion**

**6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.**

**6.1 Applicant's amendment necessitated the new ground(s) of rejection and objection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).**

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**6.2 Any response to this action should be mailed to:**



Commissioner of Patents and Trademarks, Washington, D.C. 20231

**or faxed to:** (703) 872-9306 for formal communications.

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA, Fourth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guy J. Lamarre, P.E., whose telephone number is (703) 305-0755. The examiner can normally be reached on Monday to Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert De Cady, can be reached on (703) 305-9595.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

*Guy J. Lamarre*

Guy J. Lamarre, P.E.  
Patent Examiner  
2/19/04

---